

ITINERARIES OF THE WHEELER SURVEY NATURALISTS 1871—FERDINAND BISCHOFF

BY F. M. BROWN

The main effort of the Wheeler Survey in 1871 was in Nevada and Arizona with several weeks stay in the Owens Valley region of California and a few days around St. George, Utah. Three naturalists were on the party: Dr. W. J. Hoffman, acting assistant surgeon, and Ferdinand Bischoff, zoological collector, assigned by Prof. S. F. Baird of the Smithsonian Institution; and John Koehler, zoological collector, selected by Lt. Wheeler from the men who were with him in Nevada in 1869. Only Bischoff is known to have been an entomological collector. (Wheeler 1889, p. 660).

Ferdinand Bischoff is something of a mystery man. His certificate of naturalization is in the archives of the Smithsonian Institution. It is "dated March 3, 1858, in Peoria County, Illinois, but it gives no information at all about him except that he was formerly a subject of the Grand Duke of Saxe Weimar." (Clark, letter 5. VI. 56). An amusing letter among Baird's correspondence suggests that he was married (Baird, 22. IV. 67). I have not been able to discover anything else about his life before 1865 nor after 1871. Yet during these few years he contributed many specimens new to science from out-of-the-way places in North America. W. H. Dall (1915, p. 377) noted that he was a German taxidermist and that he was lost on the New Mexico desert. I suspect, but have no evidence, that this happened in 1872. There is no mention of Bischoff in Baird's reports for years following 1871. Ewan (1950, p. 165) sought to connect Ferdinand Bischoff with Carl Gustav Christoph Bischoff, the physician-naturalist, with no success. It was through the office of Baird that Bischoff was recommended to and employed by two important exploring expeditions as naturalist, and spent additional time in the field for the Smithsonian Institution.

Bischoff's first appearance in the literature that I have searched is as a naturalist working under Robert W. Kennicott, a good friend of Baird. This was in 1865 and 1866 when Kennicott was

Chief of the Scientific Corps for the Russian Overland International Telegraph Expedition. Sometimes the expedition is referred to as the Western Union Telegraph Expedition, in honor of its American sponsors. The purpose was to scout and locate a telegraph line from Moscow in Europe to Chicago in North America. (Rothrock, with whom Ewan (*l.c.*) connects Bischoff, was botanist of the expedition. He interrupted his training in medicine to accept the post.) En route to Alaska the party of naturalists sailed from New York to Nicaragua where they took the usual route up the Rio San Juan and through Lakes Nicaragua and Managua to the Pacific. There they embarked for San Francisco (Baird 1867, p. 86). According to the minutes of the meetings of the California Academy of Natural Science, members of the expedition were guests at the meetings held on May 1, June 5, and July 3, 1865 (Proc. Calif. Acad. Nat. Sci. 3: 197, 199, 201. 1866).

During 1865 and 1866 Bischoff spent 14 months collecting in the vicinity of Sitka on Baronoff Island. "A letter from Baird to Joseph Henry Secretary of the Smithsonian Institution in March, 1867, announces the return to Washington of the Russian Telegraph Expedition and says: "Much of the most important portion of the material received consist of the collections made by Mr. F. Bischoff at Sitka during a period of over a year. . . . The specimens filled over 140 cubic feet of space . . ." (Clark, letter 5. VI. 56). From Sitka he returned to San Francisco. Correspondence, dated April 22, 1867, in Baird's letter press book suggests that Bischoff was in Washington in the winter of 1866-67 or early Spring of 1867. In the March letter to Henry quoted above, Baird suggests that Bischoff "the experienced collector to whom I have referred, be sent back to San Francisco, thence to proceed to the Aleutian Islands and to Kamtschatka and to remain a year or longer." Henry evidently agreed to the suggestion for there is an 'Open Order' dated 1867, signed by Governor General of Eastern Siberia, saying that the bearer, Ferdinand Bischoff, is to be given protection, permission to travel over Kamtschatka, in Kurilian and the Aleutian Islands as well as on the Amoor River, etc. etc. "for the purpose of making collections of objects of natural history."

Back in San Francisco, Bischoff embarked with part of the

telegraph party for Plover Bay on the Asiatic side of Behrings Strait. Their camp is still marked on hydrographic charts of the Strait, as Telegraph Camp. He returned to San Francisco in August, 1867, and continued on to Washington, D. C. The return was made via Mazatlan, Mexico, where at Baird's request Bischoff spent some time with Colonel Grayson, a contributor to the Smithsonian Institution. While in Washington, Bischoff was called upon to testify before the Senate Committee on Foreign Relations during the discussions relative to the purchase of Alaska (Baird 1868, p. 42-43).

In 1868 Bischoff was again in Alaska, this time for the Smithsonian Institution. He spent a year on Kodiak Island. During the year the Smithsonian received material from Bischoff's previous visit to Asia and some Kodiak specimens (Baird 1869, p. 24, 55). In 1869 he shipped "Eight boxes zoological collections from Alaska" and Baird noted "Mr. Ferdinand Bischoff has kept up his research in Alaska, first at Kodiak then at Kenia." (Baird 1871, p. 53).

There are several letters from Bischoff written in Gothic script from San Francisco during July and August, 1870, in Baird's correspondence file. These relate to personal matters. When Bischoff was in San Francisco he made the acquaintance of several entomologists. He gave or sold at least some of his Alaskan catch to Behr, Behrens, and Henry Edwards. Some of this material reached William H. Edwards. These became the types of *Coenonympha kodiak*, *Argynnis bischoffi*, *Lycaena kodiak*, *Pieris hulda*, and *Cyclopides skada*. Although in the original descriptions Edwards cited Kodiak, Alaska, as the type locality for each species, he corrected this for *bischoffi* to a "heath 2 miles from Sitka, Alaska, in July." (in BUTTERFLIES OF NORTH AMERICA vol. 2, *Argynnis* 3).

I have yet to discover what Bischoff did during the latter half of 1870. Perhaps he was employed at the Smithsonian, working on the material brought in by the Telegraph Expedition. When Wheeler organized the Survey West of the 100th Meridian, Baird dispatched Dr. Hoffman and Bischoff to Camp Halleck to join the party. If one reads between the lines of Wheeler's notes, it is clear that he was not too happy about having these men thrust upon him. Army records carry the two in the medical section

of the field party, Hoffman as a medical officer and Bischoff as a hospital orderly. Wheeler (*l.c.*) calls Bischoff a zoological collector on his roster of personnel for 1871. The details of the travels of Bischoff during 1871 are of particular interest to entomologists.

THE FIELD SEASON OF 1871

The 1871 season in the field extended from the 3rd of May until the first days of December. During this time the expedition, usually divided into two parties with a naturalist-collector attached to each, traveled from the Central Pacific Railway in north central Nevada to Tucson, Arizona. The first phase of the expedition was to move in two lines, one from Halleck Station and the other from Battle Mountain, south to Belmont in south central Nevada. This was done in May, June and July, when butterfly collecting in the region is at its best. It should have produced a grand haul of specimens, and probably did. Unfortunately the collected material was started on its journey east from Belmont just in time to be destroyed at Pioche, Nevada, when a disastrous fire demolished that mining town in early August. The material collected by Wheeler's party moving from San Francisco to Halleck station was not lost in this fire. The butterflies reached W. H. Edwards who found no new species among the specimens.

The second phase, from the camp in Meadow Canyon in the valley north of Jeff Davis Mountain, north of Belmont, to Camp Independence, California, was through rugged desert country too late for the spring butterflies and too early for the fall ones. Some material may have been collected, but I have had no success trying to identify it.

The third phase moved the party from Camp Independence, California, to Truxton Springs, Arizona. Two columns, one to the south of Death Valley and the other across the valley, converged on Cottonwood Springs on the east side of the Spring Mountains in Nevada near the present city of Las Vegas. This portion of the journey produced butterflies that have invariably been credited to "Arizona." From Cottonwood Springs the parties moved eastward to St. George, Utah, and then south and across the Colorado River just west of the Grand Canyon to

Truxton Springs. Wheeler and a picked group that included Dr. Hoffman moved from the camp at Cottonwood to Camp Mohave and traveled up the Colorado River through the canyons to a meeting with the land party some miles above the point at which the crossing had been achieved, a few miles up stream from what is now called Pierce's Ferry.

The last two phases lead from Truxton Springs, to Prescott, Arizona, and from there to Camp Apache and finally to Tucson where the party closed the season. Detailed itineraries for all of the parties throughout the season will be published elsewhere with supporting evidence and detailed maps. Here I will confine myself to details of Bischoff's travels from Camp Independence, California, to Prescott, Arizona. This is the area that produced the material W. H. Edwards described as new species from the expedition of 1871.

In the following time-tables for Bischoff those dates that are set in brackets are estimates by me. Neither the Corps of Engineers library, the Library of Congress nor the National Archives have been able to discover for me a copy of the list of camps occupied by the parties in this field season. I have based the following data upon reconstructions from reports of Lieutenants Wheeler, Lockwood and Lyle. (Wheeler, 1872). Throughout the period under consideration Bischoff was with Lockwood's party.

CAMP INDEPENDENCE, CALIFORNIA, TO COTTONWOOD
SPRINGS, NEVADA. (Map No. 3*)

18.vii—10.viii, at Camp Independence, California.

There is no published account of Bischoff's activities during this stay at Camp Independence. However, a careful study of the species of butterflies collected by the 1871 party makes it perfectly clear that he made at least one trek into the Sierra Nevada to the west of camp. It seems very likely that he also collected extensively in the bottoms of Owens River, possibly as far as Owens Lake. Bischoff left camp with Main Party No. 2 on 10.viii and struck southward to the vicinity of the present town of Mohave.

* These maps belong in a series prepared for the more extended study of the expedition, and thus bear numbers that have little meaning here.

- 10.viii—Lone Pine.
- 10.viii—Owens Lake.
- 11.viii—Star Ranch—This is now the town of Olanche.
- 11.viii—Hawee Meadows—This is now the town of Haiwee.
- 11.viii—Cow Springs.
- 12.viii—Little Owens Lake, known today as Little Lake.
- 13.viii—Indian Wells, somewhat north of present-day Freeman.
- 14.viii—Coyote Springs.
- 15.viii—Desert Springs, now called Desert Wells.
- 16.viii—Mosquito Springs.
- 18.viii—Surveyor's Wells.
- 18.viii—a little north of Granite Wells.
- 19.viii—Burnt Rock Springs.
- 22.viii—Saratoga Springs, southwest corner of Death Valley.
- 23.viii—Salt Springs, California.
- 27.viii—Ivanpha, Nevada.
- 29.viii—Cottonwood Springs, Nevada.

During the stay at Cottonwood Springs a side party visited Mount Charleston and it is quite possible that Bischoff was a member of this party. Another side party crossed the Las Vegas desert to Mormon Wells. I doubt that Bischoff was with this group since collecting was better in the vicinity of the camp than it could have been on the desert. The march was resumed on 15.ix.

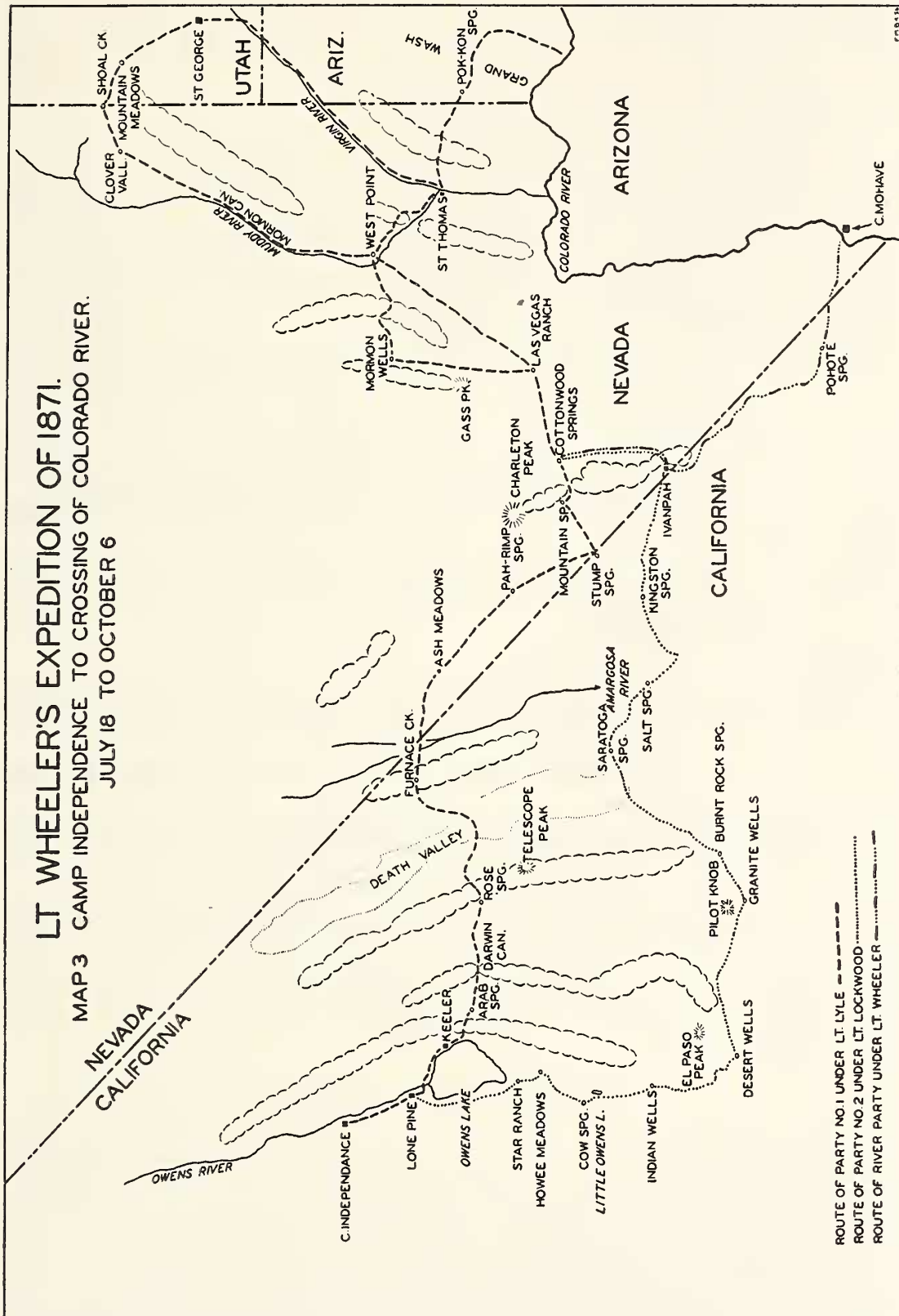
COTTONWOOD SPRINGS, NEVADA TO TRUXTON SPRINGS, ARIZONA.

(Maps 3 and 4)

- 15-20.ix—Las Vegas Ranch, now the city of that name.
- 20.ix—crossed the Las Vegas desert at night.
- 21.ix—arrived at the Muddy River, former site of West Point, a Mormon town that had been abandoned in 1870.

At this point Lockwood's command was broken into three sections. I have not been able to determine which of these contained Bischoff. All of them converged upon St. George, Utah. One party travelled via Clover Valley and Shoal Creek; the wagon followed the old Salt Lake Road; the main party followed up the Virgin River. Camp was established at St. George on 26.ix and broken on 1.x.

- 1.-2.x—passage down the bed of the Virgin River.
- 3.-4.x—camped at Pok-koon Springs.
- 5.x—arrived on the north bank of the Colorado River just up stream from the mouth of Grand Wash.
- 6.x—the entire party crossed the river into Arizona.



Through the region shown on this map Bischoff was with the party under Lt. Lockwood indicated by the dotted line.

- 7.x—Tin-nah-kah Springs.
- 8.x—At-too-vah Springs.
- 9.x—Pah-rosh Springs.
- 10.x—rounded the northwest and western side of Music Mountain to Truxton Springs.
- 10.x-24.x—camped at Truxton Springs, Arizona.

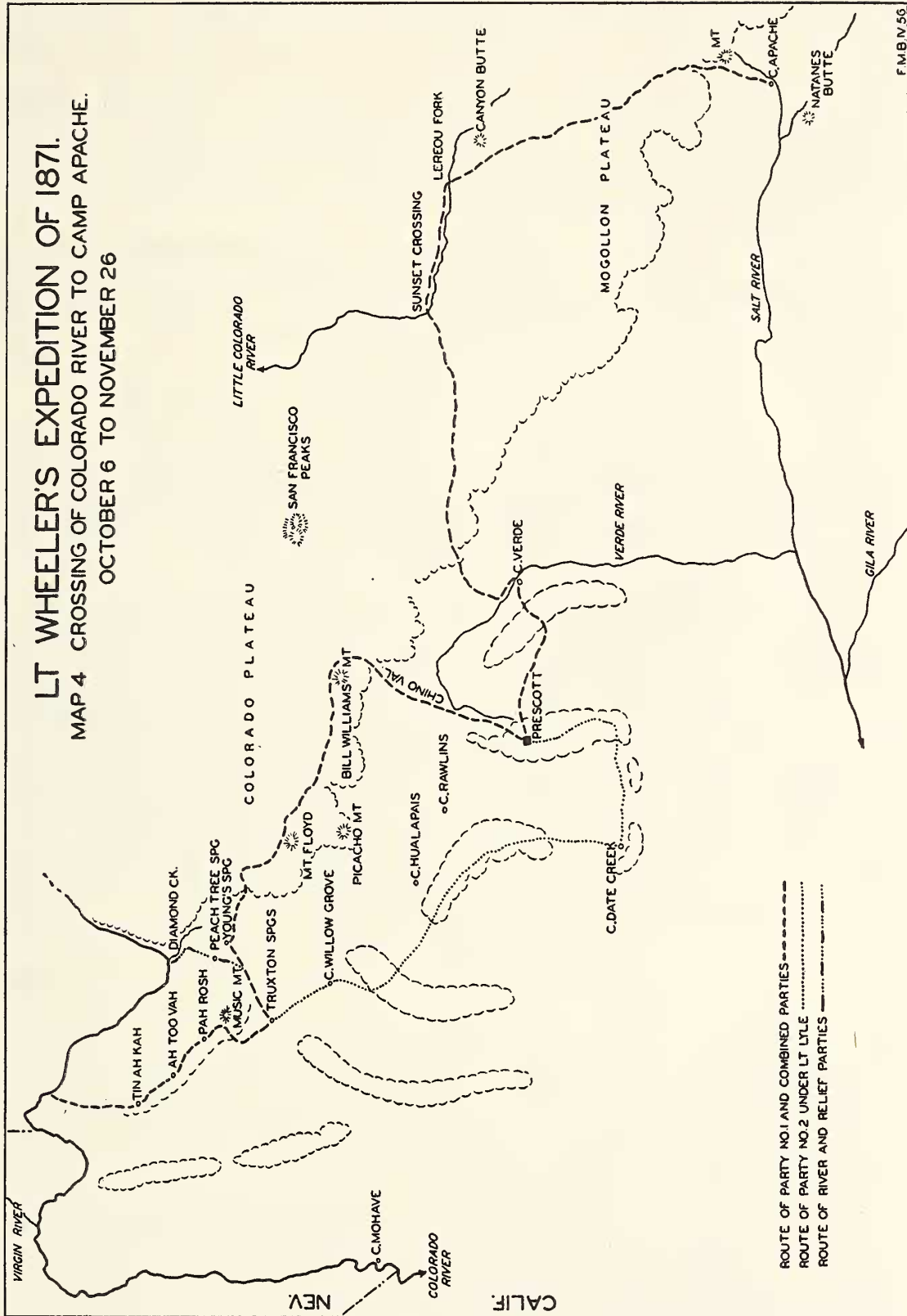
During this time there was extensive travel to and from the Colorado River at the mouth of Diamond Creek, and east and north of Truxton. The details of Bischoff's movements are not known. He probably worked the area north of Truxton on Music Mountain and in the canyons.

- 24.x—left Truxton Springs and travelled east for three days along the location stakes for the railroad. This brought the party somewhat east of Mount Floyd.
- 27.x—continued eastward north of Bill Williams Mountain until the road from Prescott to the San Francisco Mountains was intercepted.
- 28.x—followed this road toward Prescott and descended from the Colorado Plateau.
- 29.x—crossing Hell Canyon and Rattlesnake Canyon and the intervening rough ground to
- 30.x—the Chino Valley.
- 31.x—arrived at Prescott, Arizona.
- 1-10.xi—stayed at Prescott. During this time Bischoff collected assiduously in the district.
- 10.xi—The party left Prescott and crossed the Black Hills into the valley of the Rio Verde.
- 11.xi—The Rio Verde was crossed a short distance north of Old Camp Verde.
- 12.xi—The surface of the Mogollon Plateau was gained via Beaver Creek.

By the time the party gained the level of the Mogollon Plateau the season was so advanced that there was little entomological collecting to be done. The party worked its way to Camp Apache and disbanded at Tucson in December.

THE BUTTERFLIES COLLECTED

Although there are numerous references to butterflies collected by the Wheeler Expeditions in Southern Arizona or Arizona, I have included here only those definitely collected in 1871. The others came from collections made in 1873, 1874 and 1875. Very often it is only after following a long trail through the literature, that proof is available that a particular species or specimen was collected by the Wheeler parties. The tracking that is necessary can be shown by the case of *Atrytonopsis Deva* Edwards. In the



During this stage of the journey Bischoff was with the combined party the track of which is shown by a dashed line.

original description (Edwards 1876, p. 292) is this statement of the type locality: "From a single example received from Prescott." Five years later (Edwards 1881, p. 4) in a note about the species we find; "I described a female of this species received from Prescott, Arizona." At last there is a reference to the Wheeler Expedition! "*Deva* was originally described from a single female received from the Wheeler Expeditions, 1875 or 1876" (Edwards 1882, p. 138).

With this preamble, I will set forth a brief discussion of each of the species that I believe was collected by Bischoff in 1871. For some I have come to definite conclusions, for others I must pass the task to more astute students. For wide spread species I can do no more than note that the species was taken.

*Satyrus wheeleri** Edwards—"From nine males taken by the naturalists of Lieutenant Wheeler's Expedition, 1871, between the Cascade and Rocky Mountains, but the precise locality not indicated" (Edwards 1873, p. 343).

The type locality for this large *Cercyonis* has been guessed at from Owens Lake to Camp Apache. The guesses that I have seen have been based upon the original series and no others. There are several specimens in the collections of the University of Utah that compare very favorably with plates of both Edwards and Mead. These specimens all came from the southwest corner of Utah. One in my collection was taken at Washington, Utah, only five miles from St. George, where Bischoff camped between the 26th of September and the 1st of October in 1871. The time of the year fits well with the late summer appearance of our Great Basin *alope*-like butterflies. Another possible site for the type locality of *wheeleri* is Cottonwood Springs, Nevada, where Bischoff collected between August 30 and September 15.

Argynnis nokomis Edwards, (*apacheana* Skinner)—"Specimens of this magnificent insect were brought by the expedition from Arizona in 1871" (Mead 1875, p. 751).

This is the re-described *nokomis* of Edwards and the type material of *Speyeria nokomis apacheana* Skinner. In the original description Edwards (1862, p. 222) stated the type locality of *nokomis* as "Rocky Mountains, and the mountains of California."

* Throughout I will use the generic designation used in the original description.

Later (BNA I, Argynnis IV) he states "From 5 ♂, 2 ♀, brought from Arizona by the Exploring Expedition under Lieut. Wheeler, in 1871, but with no further intimation of their locality. The original specimen from which the description of the species was drawn was received by me in 1862, through the Smithsonian, and was labelled 'Bitter Root Mountains.' Until the present year (1872) it has been an unique in my collection and, so far as I know, not found in any other." As you can see this statement does not wholly agree with that made in the original description. Edwards' single specimen could not have come from both sides of the Great Basin, and he knew of no other in a collection in 1872.

Thus far the industrious collectors of California have found *apacheana* in a restricted area at the north end of Owens Valley. This area extends from Round Valley to Mono Lake. The region lies several miles west of the track followed by Dr. Hoffman on his entry into Owens Valley. Bischoff may have been with him. However, the party was traveling fast and I know from the records that they made no side trips into the Round Valley — Mono Lake region. Although we do not know of a colony of *apacheana* in the mountains west of Camp Independence there may have been one there in 1871, or there may be colonies in several of these east slope valleys of the Sierras. Since Bischoff's stay at Camp Independence coincides with the flight period of *apacheana* it seems reasonable to surmise that the type locality is in the mountains west of Camp Independence.

Melitaea palla Boisduval—"This species was taken by the Expedition of 1871, probably in Utah or Nevada." (Mead 1875, p. 759).

Melitaea palla does not fly in the regions visited by the expedition in 1871. There are two other butterflies described later than 1874 that Mead may have confused with *palla*. There are *neumoegeni* Skinner and *acastus* Edwards. The expedition arrived too late in *neumoegeni* territory to find it and the insect is so much lighter than *palla* that I doubt very much if Edwards, who named all of the material for Mead, had *neumoegeni* before him when he determined "*palla*." The flight period for *acastus* in Nevada is May and June. It is possible that Bischoff collected the specimens in question between Battle Mountain and Belmont

and that these "*palla*" escaped destruction at Pioche. Only examination of the specimens which should be at the Carnegie Museum in Pittsburgh will settle the question.

Melitaea hoffmannii Behr—"brought by the expedition of 1871" (Mead 1875, p. 760).

This is an alpine insect. If Edwards was correct in his determination Bischoff must have made one collecting trip into the high country west of Camp Independence. This is the only place he stayed long enough to have done so. Since Edwards was in close touch with Behr I think we can accept the determination with confidence that it is correct.

Phyciodes marcia Edwards—"taken by the expedition in 1871" (Mead 1875, p. 763).

Phyciodes canace Edwards—"The type of this species was taken in Southern California. The only other known specimens are those collected by the expedition in 1871, probably in Arizona" (Mead 1875, p. 764).

This butterfly name is considered a synonym of *picta* Edwards. Edwards (1882, p. 22) corrected his statement about the type locality of *canace*: "It was originally described from a ♂ received from Arizona, while *picta* was described from several males brought by the late Mr. Ridings from Nebraska." Bauer (1954, p. 100) says of *picta* "Along the Verde River." Martin and Truxal (1955, p. 17) say of it "Arizona, Aug.-Oct." Since Bischoff was in the extreme northwestern part of Arizona during October, I think it safe to assume that these specimens were collected in the vicinity of Truxton Springs.

Pyrameis carye Huebner—"by the expedition of 1871, probably from Arizona" (Mead 1875, p. 770).

Libythea carinenta Cramer—"brought in by the expedition of 1871, probably from near the border of Mexico." (Mead 1875, p. 772).

From Tucson in December? It seems more likely that Bischoff took *larvata* somewhere between the Colorado River and the Rio Verde.

Lemonias dumeti Behr—"taken by the expedition in 1871, probably in Utah or Arizona." (Mead 1875, p. 786).

Since both *dumeti* and *cythera* (*q.v.*) generally are considered synonyms of *mormo* Felder and Felder, it is possible that the

specimens referred to here are those that Edwards described as *cythera*. Mead received from Dr. H. C. Yarrow the information that Edwards had given the Corps of Topographical Engineers about the specimens collected. This was compiled by Mead, added to with data from his own experience in Colorado and with information given him directly by Edwards. It looks as though through oversight or ignorance Mead did not delete the name *dumeti* from the data presented him by the Corps.

Lemonias cythera Edwards—"collected by the expedition in Arizona" (Mead 1875, p. 786).

In the original description Edwards (1874, p. 346) states that three males were taken by the 1871 expedition. According to Bauer (1954, p. 100) there are scattered colonies of *mormo* in the Verde Valley. I assume that this is generally true of northwestern Arizona. The second brood is on the wing through September and October. It is likely that Bischoff collected this material on the dry scrubby hillsides north of Truxton Springs, either on Music Mountain or the Grand Wash Cliffs. Thus a good statement of the type locality of *cythera* is the vicinity of Truxton, Arizona.

Thecla halesus Cramer—"brought in by the expedition of 1871" (Mead 1875, p. 777).

Thecla sylvinus Boisduval—"brought in by the expedition of 1871" (Mead 1875, p. 778).

This and the preceding species are associated with oak chaparral. There are two "most likely" spots where Bischoff collected *sylvinus*. Examination of the material which should be in the Carnegie Museum should pin point it to one. If the specimens are race *putnami* Hy. Edwards, then Meadow Canyon north of Belmont, Nevada, is the best bet for the area in which they were collected. If on the other hand the specimens prove to be *desertorum* Grinnel, it is likely they were collected in the vicinity of Camp Independence.

Lycaena melissa Edwards—"I have also received this species from Nevada, and from Arizona by Lieut. Wheeler's Expedition of 1871" (Edwards 1873, p. 348).

Lycaena piasus Boisduval—"collected by the expedition of 1871" (Mead 1875, p. 785).

Most likely in the foothills west of Camp Independence.

Colias edwardsii "Behr"—"Specimens were taken by the expedition at Owen's Lake, California." (Mead 1875, p. 749).

Mead erred in crediting the species name to Behr. It is a Behr manuscript name validated by W. H. Edwards and honors Henry Edwards. Bischoff was in the vicinity of Owens Lake at the right time of the year for *edwardsii*. 1871 was the only year between 1871 and 1874, the period covered by Mead's report, when a Wheeler party visited Owens Lake region.

Papilio bairdii Edwards—"the expedition took specimens in New Mexico in 1871, and in Arizona in 1873." (Mead 1875, p. 741).

This statement does not conform with what we know about the Wheeler Expeditions. There was no collecting in New Mexico done in 1871. In 1873, Wheeler, with the main party, was based upon Santa Fe, New Mexico. The states should be reversed in the quotation from Mead.

Papilio pilumnus Boisduval—"This species was taken by the expedition in 1871. It occurs in New Mexico and southward." (Mead 1875, p. 741).

This species is exceedingly rare along the Mexican border of Arizona and possibly New Mexico. I suspect that the specimen was collected in Arizona on one of the later expeditions. There is a possibility that it was collected by Bischoff after the 1871 season closed and while he was in New Mexico where he lost his life.

Leucoscirtes ericetorum Boisduval—"Brought in by the expedition of 1871, probably from Utah or Arizona." (Mead 1875, p. 787).

Bischoff was too late for the species in Arizona. It is on the wing there from April through August and into September. Both Bauer (1954, p. 101) and Comstock (1927, p. 209) note that it is a mountain species. My best guess is that the material was collected west of Camp Independence or in the Spring Mountains of Nevada.

Atalopedes huron Edwards—"Brought in by the expedition of 1871" (Mead 1875, p. 789).

This is now called *campestris* Boisduval. Material in my collection suggests that both names may be needed in subspecific standing.

Hesperia yuma Edwards—"From a single male received from

Arizona by Lieut. Wheeler's Expedition of 1871.'" (Edwards 1873, p. 346).

A very careful study of the distribution of this insect by Dr. J. W. Tilden, coupled with my own studies of the Wheeler naturalist's itineraries suggest strongly that this species was collected by Bischoff in the vicinity of Owens Lake, California, around August 10th. The details of this are published elsewhere in the LEPIDOPTERISTS' NEWS.

Hesperia chusca Edwards—"From a single ♀ brought from Arizona by Lieut. Wheeler's Expedition of 1871.'" (Edwards 1873, p. 346).

This is a synonym of *Polites sabuleti sabuleti*. Lindsey, Bell, & Williams (1931, p. 102) state that the insect is found from southern California to Arizona and northward through Nevada to Oregon from April through September. Martin & Truxal (1955, p. 31) extend the temporal range to October in southern California. Bauer (1954) does not list the species from the upper Rio Verde Valley in Arizona. It looks as though the type may have come from anywhere along the route except Arizona! The fact that Bauer did not find it in the Verde Valley does not eliminate the Truxton area as the type locality.

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